Potential RAOs for IRM with primary objective to address LNAPL and secondary objective to address chemical contaminants in the soil (either some or all classes of chemical contaminants):

1. Removal or treatment of recoverable LNAPL where practicable - Recovery of LNAPL in its present physical state is not considered to be practicable as it is considered technically not feasible. The LNAPL may however be removed through excavation of the media or as part of a technology which will increase its viscosity.
2. Treatment of residual LNAPL where practicable – Technically feasible and therefore, assumed to be applicable. It can be applied within the area where LNAPL presents leachability concerns or within the entire area where LNAPL is found. There are cost implications depending on the size of the area that is treated. The larger the area, the higher the cost consideration.
3. Containment of potentially mobile LNAPL where removal or treatment are not practicable - For the areas where residual LNAPL will be allowed to remain following IRM (for example, for areas outside the area with leachability concerns if only this area is treated), this RAO is assumed to be met through the relatively immobile nature of the LNAPL (no additional containment is necessary).
4. Addressing other chemical contamination in soils within the area treated by the IRM – Technologies will differ in their effectiveness to treat the various classes of contaminants present. Therefore, the costs of subsequent treatments needed to address chemical contaminants remaining after the IRM, will vary between technologies.

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
No Action	No Further Action	None	No action.					Required by NCP for comparison with other alternatives; does not meet RAOs.
Monitoring	Monitoring	Measuring LNAPL thicknesses Groundwater sampling	Monitor the effectiveness of the chosen IRM over the course of time.	High	Low	Low	Low	Does not meet RAOs when implemented alone; is applicable only in conjunction with other technologies.

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TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
Institutional Controls	Institutional Controls	Land Use Restrictions	Restrict access to LNAPL-contaminated soils through local ordinances, building permits, restrictive covenants on property deeds (Deed Notice) and state registries of contaminated sites.	Moderate	Moderate	Moderate	Low	Does not meet RAOs when implemented alone; may be applicable in conjunction with other technologies.
	Groundwater Use Restrictions	Access restrictions to groundwater	Establish a Classification Exception Area (CEA) for the area impacted by LNAPL, which will impose restrictions on groundwater use.	Moderate	Moderate	Moderate	Low to moderate	Does not meet RAOs when implemented alone. Potentially applicable in conjunction with other technologies.
Monitored Natural Attenuation (MNA)	*Monitored Natural Attenuation*	*Monitored natural attenuation of groundwater.*	*Use of naturally occurring physical, chemical and biological processes such as dissolution, biodegradation and volatilization to reduce LNAPL concentrations.*	*High*	*Low*	*Low*	*Moderate*	*Based on NJAC 7:26E-6.1(d), "…natural remediation of free and/or residual product will not be allowed." Technically infeasible for LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. Does not meet RAOs.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
Containment	*Passive Hydraulic Controls*	*Slurry or Sheet-pile Wall*	*Physical barrier to groundwater migration.*	*Moderate*	*Low*	*Low*	*Low to Moderate*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*
	Vertical Subsurface Barriers	*Grout Curtain*	*Create subsurface barrier to horizontal GW flow by grout injection.*	*Moderate*	*Low*	*Low*	*Moderate*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*
	Surface Controls	*Grading*	*Reshape topography to control infiltration, runoff, and erosion.*	*High*	*Low*	*Low*	*Low*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. Not effective unless used in conjunction with other technologies.*
		Revegetation	*Add topsoil, seed and fertilize to establish vegetation (to control erosion and reduce infiltration).*	*High*	*Low*	*Low*	*Low*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. Not effective unless used in conjunction with other technologies.*
	Horizontal Subsurface Barriers	*Block Displacement*	*Encapsulate block of soil with grout in conjunction with vertical barriers.*	*Moderate*	*Low*	*Low*	*Moderate to High*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
	Cover	*Soil*	*Place clay over contaminated soils.*	*High*	*Low*	*Low*	*Moderate*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*
		Multi-layer	*Cap includes a 2 foot thick clay layer and an impermeable geomembrane liner. In addition, a drainage layer and freeze-thaw protective layer are included in cap.*	*Moderate*	*Low*	*Low*	*High*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*
		Asphalt	*Place asphalt or concrete over contaminated soils.*	*Moderate*	*Low*	*Low*	*Moderate*	*Does not meet the RAO to teat residual LNAPL. Will not be effective to treat chemical contamination within the area targeted by the LNAPL IRM. LNAPL is essentially immobile and therefore containment technologies would not provide added effectiveness.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
In Situ Treatment	**Physical/ Chemical**	*In Situ Chemical Oxidation (ISCO)*	*Degrade contaminants by chemical oxidation. Typical oxidants include ozone, hydrogen peroxide, permanganate, and persulfate.*	*Low, highly dependent on the contaminant quantity requiring oxidation*	*Low*	*Low*	*High*	*This technology may meet the RAO to teat residual LNAPL. However, the quantity of reagent required to oxidize LNAPL in-situ would be difficult to inject and cost-prohibitive. If hydrogen peroxide is used, then heat generated from the reaction would likely mobilize residual LNAPL during and after implementation, and may result in significant generation of vapors. This technology is unproven for large LNAPL sites. It will treat some of the classes of chemical contaminants but leave other untreated requiring revisiting areas of the site multiple times to treat different types of contaminants.*
		Stabilization/Solidification	**Immobilize contaminants using solidification agents.**	**High**	**Moderate**	**Low**	**High**	**This technology may meet the RAO to teat residual LNAPL. This technology would be effective to treat LNAPL and some of the other classes of chemical contaminants present in the soil, but not all. If a class of contaminants is not treated, then the application of this technology will prohibit access to the contaminated media for future remedial investigation/remedial actions because of the addition of stabilizing agents.**
		Shallow Soil Mixing	*Mixing of soil in-place using large augers to mix in treatment amendments and reduce LNAPL concentrations.*	*High*	*Moderate to High*	*Low*	*High*	*Potentially feasible for residual LNAPL, but only as an enhancement with other technologies. Does not meet RAOs by itself and therefore not retained as a technology by itself.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		Air Sparging	Inject air into groundwater to volatilize and enhance aerobic biodegradation of amenable contaminants. This is often combined with the use of SVE to capture the air.	Moderate	Moderate	Low	High	This technology may meet the RAO to teat residual LNAPL. It will be applicable to the treatment of the lighter organic fraction in the LNAPL that may present the leachability concerns. This technology is not expected to be effective if the mass of all residual LNAPL is to be treated. The technology will remove the lighter compounds present in LNAPL through a combination of air stripping and aerobic biological processes. Will address some of the classes of chemical contaminants present in the soil (e.g., the VOCs). For classes of contaminants not addressed by the technology, this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat for these contaminants.

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		Soil Vapor Extraction (SVE)	Extract contaminants by establishing a vacuum.	Moderate	Moderate	Low	Moderate	This technology may meet the RAO to teat residual LNAPL. It will be applicable to the treatment of the lighter organic fraction in the LNAPL that may present the leachability concerns. This technology is not expected to be effective if the mass of all residual LNAPL is to be treated. The technology will remove the lighter compounds present in LNAPL through a combination with air sparging in some portions of the site to recover injected air in the shallow unsaturated soils. Implementation would be challenging due to the shallow water table. Will address some of the classes of chemical contaminants present in the soil (e.g., the VOCs). For classes of contaminants not addressed by the technology, this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat for these contaminants.

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		Washing/ Flushing	*Wash or flush soil with water or surfactant.*	*Moderate*	*Low*	*Low*	*High*	*This technology is not expected to significantly reduce the volume of LNAPL due to the physical properties of the LNAPL (immobile, high viscosity). A large water extraction, treatment, and disposal system would be required for this technology and would make it costly in comparison to others if the quantity of LNAPL to be treated is small. Will address some of the classes of chemical contaminants present in the soil but potentially not all. If a class of contaminants is not treated, then the application of this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat different types of contaminants.*
		Vitrification	*Melt/solidify soil matrix using electric currents.*	*Low*	*Moderate*	*High*	*High*	*Limited commercial applications. Would prevent access for future investigation/remediation efforts. Very costly technology relative to other technologies.*
		Pneumatic Fracturing	*Fracturing of the consolidated formation to increase permeability and thus increasing effectiveness of In Situ treatment.*	*Low*	*Low*	*Low*	*High*	*IRM is focused on shallow LNAPL contamination, and fracturing is not necessary based on moderate subsurface hydraulic conductivities.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
	Biological	Enhanced Bioremediation (anaerobic)	Degrade contaminants by stimulating biological growth through addition of an organic substrate and/or nutrients.	Moderate	Low	Low	Moderate	Potentially feasible for residual LNAPL, but only as an enhancement with other technologies. Unlikely to meet RAOs by itself and therefore not retained as a technology by itself.
		Enhanced Bioremediation / Biosparging (aerobic)	Biologically degrade organics through stimulation of aerobic organisms by the addition of oxygen in air. The addition of air is at low flow so there is no need for using SVE to capture vapors.	Moderate	Low to Moderate	Low	Moderate	This technology may meet the RAO to teat residual LNAPL. It will be applicable to the treatment of the lighter organic fraction in the LNAPL that may present the leachability concerns. This technology is not expected to be effective if the mass of all residual LNAPL is to be treated. The technology will remove the lighter compounds present in LNAPL through a combination of air stripping and aerobic biological processes. Will address some of the classes of chemical contaminants present in the soil (e.g., the VOCs). For classes of contaminants not addressed by the technology, this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat for these contaminants.

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		Phytoremediation	*Phytoremediation uses plants and microbes associated with the plant root system to stabilize, degrade, or extract contaminants from the soil and groundwater by either adsorption or absorption.*	*High*	*Low to Moderate*	*Low to Moderate*	*Low*	*Not effective for soil with highly saturated residual NAPL present.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
	Thermal	*Hot Air or Steam Stripping*	*Inject hot air or steam/ to vaporize volatile and semi-volatile contaminants and recover the vapors.*	*Low, difficult to implement with shallow vadose zone*	*Moderate to High*	*Low*	*High*	*This technology may meet the RAO to teat residual LNAPL. It may be very difficult to implement in the shallow vadose zone at the site and the cost of providing the hot air or steam will be very high because of the high water table. It will be much more costly than other In Situ technologies such as air sparging / biosparging. It will be applicable to the treatment of the lighter and medium organic fraction in the LNAPL (VOCs and SVOCs) that may present the leachability concerns. This technology is not expected to be effective if the mass of all residual LNAPL is to be treated. The technology will remove the VOCs and SVOCs present in LNAPL through a combination of air stripping and aerobic biological processes. Mobilizing LNAPL and vapor collection would require consideration due to shallow groundwater table. Feasible for residual LNAPL as well as treatment of some of the classes of chemical contaminants present in the soil (e.g., the VOCs and SVOCs). If a class of contaminants is not treated, then the application of this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat different types of contaminants. Not retained because of shallow vadose zone.*

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		Radio Frequency Stripping	*Use network of Radio Frequency Transmitters to heat soil; vaporize volatile and semi-volatile compounds, and collect them with a vapor extraction system.*	*Low*	*Moderate to High*	*Low*	*High*	*Much more costly than other In Situ technologies. Would be difficult to implement due to shallow groundwater table.*
Fluid Collection, Treatment, Discharge, Disposal	*Collection - LNAPL extraction*	*Recovery Trench*	*Trenches within areas of mobile LNAPL are installed and backfilled with low-permeability material such as pea gravel. LNAPL preferentially flows into the low-permeability material and collects in sumps for extraction.*	*Moderate*	*Low to Moderate*	*Low*	*Moderate*	*Not effective for residual LNAPL.*
		Recovery Wells	*Large-diameter boreholes are installed with extraction wells and sumps. The boreholes are backfilled with low-permeability material such as pea gravel.*	*Moderate*	*Low to Moderate*	*Low*	*Moderate*	*Not effective for residual LNAPL.*

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Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
	Collection - Multi Phase Extraction	*Multi Phase Extraction*	*Simultaneous extraction of LNAPL, groundwater, and soil gas*	*Moderate*	*Low*	*Low*	*Moderate to High*	*Not effective for residual NAPL.*
Fluid Collection, Treatment, Discharge, Disposal	*Treatment - Physical-Chemical*	*Oil:Water Separation*	*Phase separation process to remove oil from water stream*	*Moderate*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
		Air Stripping	*Phase separation from dissolved-phase to vapor-phase by forced air*	*Moderate*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
		Steam Stripping	*Phase separation by steam and forced air*	*Low*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
		Adsorption	*Contaminants are removed from the waster stream by adsorption with Granular Activated Carbon or other adsorptive media such as activated clay*	*High*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
		Oxidation	*Chemical, photo, or other oxidation process whereby organic contaminants are converted to carbon dioxide and water*	*High*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*

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General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
Fluid Collection, Treatment, Discharge, Disposal	*Discharge*	*Groundwater:* *Surface water* *Re-injection* *Publicly Owned Treatment Works (POTW)*	*Includes various options for the discharge of treated groundwater.*	*Moderate*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
Fluid Collection, Treatment, Discharge, Disposal	*Disposal*	*LNAPL:* *Offsite Treatment Storage and Disposal Facility (TSDF)*	*Disposal of extracted LNAPL at an offsite TSDF.*	*High*	*Low*	*Low*	*Low*	*Not effective for residual NAPL.*
Excavation, Treatment, Disposal	**Excavation of Soils**	**Backhoe/Excavator/Front-end Loader**	**Physically remove shallow soils.**	**Moderate**	**Moderate**	**High**	**High**	**This technology may lead to either meeting the RAO to remove residual LNAPL or meeting the RAO of treating residual LNAPL. The RAO which is met will depend on the type of treatment and disposal with which excavation is combined. Excavation is technically feasible to depths of about 20 feet. However, the shallow depth to water at this site would require construction dewatering during excavation. This technology may also treat or remove from the site other classes of chemical contaminants present in the soil.**

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
Excavation, Treatment, Disposal	Treatment - Physical/ Chemical	Stabilization	Immobilize free product and contaminants to prepare material for transport and disposal.	Moderate	Moderate	Low	High	This technology may meet the RAO to treat residual LNAPL. This technology would be effective to treat LNAPL and other classes of chemical contaminants present in the soil. If a class of contaminants is not treated, then the application of this technology will prohibit access to the contaminated media for future remedial investigation/remedial actions because of the addition of stabilizing agents.
	Treatment - Thermal	Low-Temperature Thermal Desorption	Processing soil through thermal treatment unit desorbs contaminants from soil and removes them in the off-gas, which also may require treatment.	Low	Moderate to High	Moderate	High	This technology may meet the RAO to teat residual LNAPL. It will be applicable to the treatment of the lighter and medium organic fraction in the LNAPL (VOCs and SVOCs) that may present the leachability concerns. This technology is not expected to be effective if the mass of all residual LNAPL is to be treated. The technology will remove the VOCs and SVOCs present in LNAPL through air stripping. Vapor collection would require consideration. Feasible for residual LNAPL as well as treatment of some of the classes of chemical contaminants present in the soil (e.g., the VOCs and SVOCs). If a class of contaminants is not treated, then the application of this technology will not prohibit access to the contaminated media for future remedial investigation/remedial actions. Some classes of contaminants will not be addressed and will require revisiting areas multiple times to treat different types of contaminants.

TABLE 3

Technology/Process Option Evaluation—Residual LNAPL & Other COCs in Subsurface Soil

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General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
		High-Temperature Thermal Desorption (Onsite Incineration)	**Combust soils at high temperature.**	**Low**	**Moderate to High**	**High**	**High**	**This technology may meet the RAO to teat residual LNAPL as well as other classes of chemical contaminants present in the soil. However, it is likely not to be cost competitive and air treatment and permitting requirements would be substantial.**
		Plasma	*Expose soils to super-heated plasma.*	*Low*	*High*	*High*	*High*	*Extensive treatability testing required; costs similar to incineration; unproven technology.*
		Infrared	*Decompose contaminants with infrared radiation.*	*Low,* *Unproven technology*	*Moderate to High*	*Moderate*	*High*	*Extensive treatability testing required; costs similar to incineration; unproven technology.*
		Wet Air Oxidation	*Use high temperature and pressure to thermally oxidize contaminants.*	*Low*	*Moderate to High*	*Moderate*	*High*	*Not cost competitive.*
		Offsite Incineration	*Combust soils in offsite commercial incinerator.*	*High*	*Moderate to High*	*High*	*High*	*This technology may meet the RAO to teat residual LNAPL as well as all other classes of chemical contaminants present in the soil. However, it is not cost competitive.*
Excavation, Treatment, Disposal	*Disposal - Asphalt batching*	*Offsite asphalt plant*	*Incorporation of recovered LNAPL into asphalt material for reuse in paving applications.*	*High.*	*Moderate*	*Moderate*	*Low*	*Liability of waste re-use from a Superfund site would be a concern. The physical and chemical characteristics of the recovered LNAPL may not be appropriate for asphalt batching*

TABLE 3

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Diamond Head Oil Superfund Site, Kearny, New Jersey

General Response Action	Remedial Technologies	Process Options	Description	Technical Implementability	Effectiveness		Capital and O&M Cost	Screening Comments
					LNAPL	COCs in Subsurface Soil[A]		
	Disposal - Offsite	**RCRA Subtitle C or Subtitle D Landfill**	**Remove material from site for disposal in RCRA Subtitle C or D permitted landfill.**	**Low**	**High**	**High**	**High**	**This technology will meet the RAO to remove residual LNAPL from the site through offsite disposal. Soils are likely below any hazardous waste characterization limits and can be disposed in a Subtitle D Landfill. However soils will be tested and any soils failing TCLP limits will require disposal in Subtitle C landfill.**
	Disposal - Onsite	**Onsite placement of treated soil**	**Place material onsite after treatment.**	**High**	**High**	**High**	**High**	**This technology is retained because, combined with excavation and treatment, it may meet the RAO to treat residual LNAPL. Soils can be treated and placed onsite. Classes of contaminants that were not addressed through the treatment phase, will require revisiting areas for treatment. The contaminants that will require addressing will depend on the preceding treatment method.**

Note: Remedial technologies are screened for Implementability, Effectiveness, and Cost based on criteria rankings of "Low", "Moderate", and "High".
Remedial technologies in blue italics have been screened from further consideration because they prohibit access to contaminated media for future remedial investigation/remedial actions.
Remedial technologies in red italics have been screened from further consideration based on the screening criteria and whether the technology would meet the RAOs.
Remedial technologies in bold have been retained for inclusion in remedial alternatives.
SVE – soil vapor extraction
ISCO – in-situ chemical oxidation
IRM – Interim Remedial Measure
LNAPL – light non-aqueous phase liquid
NA – not applicable
A – Other COCs in subsurface soil include VOCs, PAHs, various metals, and 2 pesticides.